DOCUMENT RESUME

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ABSTRACT

An overview and samples of some of the materials contained in the Elementary Metric Project's curriculum for grades 1-6 are presented. Information is given concerning the adoption of the program. The sample activity sheets deal with linear measurement, mass, volume, and temperature. (MP)

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SE 026 577

OVERVIEW

This booklet contains an overview and samples of some of the materials contained in the Elementary Metric Project's curriculum for grades 1-6. This curriculum is now being made available to interested school districts at a nominal cost.

The project has been validated by the Joint Dissemination Review Panel and selected by the United States Office of Education for the National Diffusion Network. The network provides information and services to assist educators in making use of educational programs.

This program was developed and implemented in the Bismarck School System, Bismarck, North Dakota with Title III funds. It has since been implemented in the state of North Dakota by 80% of the school systems (public and non-public).

The project has an outstanding record of helping teachers present metrics with confidence and of helping children achieve outstanding progress in metric education.

The purpose of the Elementary Metric Project is to disseminate the metric curriculum developed by the Bismarck metric project and to provide trainer and teacher inservice to selected potential adopters.

The metric trainer inservice includes twelve hours of intensive metric training for your school district representative. These trainers are to be inserviced and then return to their local school district to inservice the local education agency classroom teachers. The component used for inservice consists of the following units: 1) Introduction to the Metric System, 2) Metre, 3) Litre, 4) Mass and 5) Temperature. A teacher inservice pre-post test has been developed and field tested to measure gains made in metric knowledge at the inservice workshop. A classroom visitation will be arranged for interested trainers after completion of the workshop. Inservice workshops will be conducted at the project site or other arranged sites.

The project's student curriculum includes coordinated-sequential objectives and curriculum, pre-post tests and answer keys and a teacher's manual containing suggested metric activities for each grade level (1-6). The curriculum consists of approximately fifty (50) activity lessons for each grade level. These activity sheets deal with linear measurement, mass (weight), volume (capacity) and temperature. The sequential arrangement of the curriculum allows for easy reproduction of activity sheets for classroom use. In addition, the metric project provides a list of recommended metric hands-on materials to be coordinated with the teaching of the trainer inservice component and the student curriculum activities.

Financial Requirement

Costs vary depending upon the number of students involved and present available metric equipment. A detailed list of recommended hands-on metric equipment is available upon request.

One copy of the curriculum need be purchased at $100 (our printing cost). This can be reproduced by the adopters in quantities sufficient to meet the needs of the school district. Necessary materials (this includes inservice packet for teachers, student curriculum and hands-on materials...costs of reproduction are not included) for an elementary school of approximately 350 students and 20 inservice staff members will cost about $650 provided there is no equipment on hand presently.

Adopting agency assumes the cost of travel and per diem expenses to the inservice site.

Funding

Schools wishing to adopt the program may receive assistance from State Facilitator Projects or from their respective state department of education.

Services

Training sessions will be provided at the Developer District. Training dates at the Developer District, including school visitations, have been scheduled as follows:

November 14-16, 1978	January 29-31, 1979
December 11-13, 1978	February 26-28, 1979
January 8-10, 1979	March 12-14, 1979

The State Facilitator Project in your area may be able to provide additional information or assistance in pursuing an adoption. If you would like the address and phone number of the State Facilitator, or if you have any other questions, contact our office.

The project director will moniter the progress of the adoption installation and make on-site visits, as time permits, to adopting districts in order to assess the degree of fidelity in the adoption and to render any appropriate technical assistance.

Adoption

The adopter school will need to complete a Metric Readiness Survey form provided by our office and, also, will need to be represented by a trainer for the inservice workshop. The adopter school trainer will conduct inservice training for teachers in his or her district and will be responsible for carrying out a management and evaluation plan designed by our office. The adopter school and project director will sign an agreement of committal to the project. Questions about adoption or requests for additional information about the project may be referred to our office. Interested potential adopters may contact:

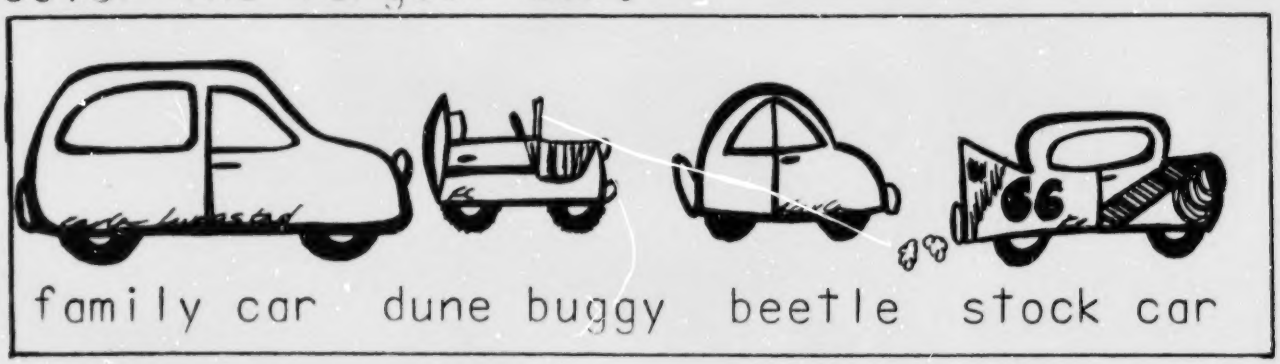
ELEMENTARY METRIC PROJECT
Roland B. Huber, Director
400 Avenue E East
Bismarck, North Dakota 58501
Telephone (701) 255-1987

LARGEST

Color the largest mouse.

Color the largest animal.

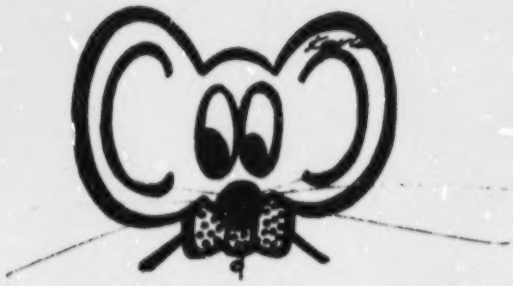
Color the largest car.



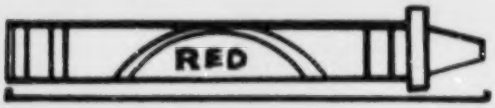
1st Grade

The student will be able to identify which object is longer, shorter, larger, smaller or equal when comparing objects.

FIND THE LENGTH

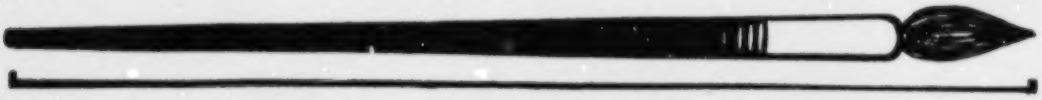


Use a centimetre ruler to measure the things below.

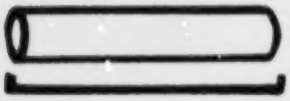


_____cm

_____cm



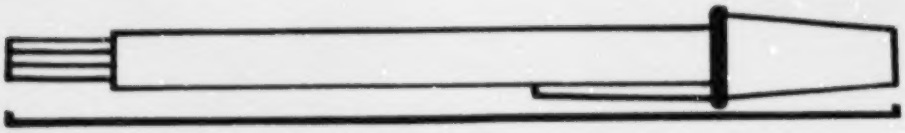
_____cm



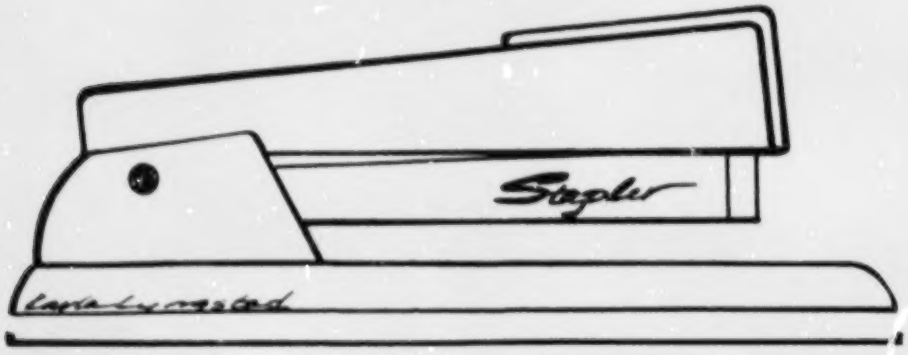
_____cm

_____cm

_____cm



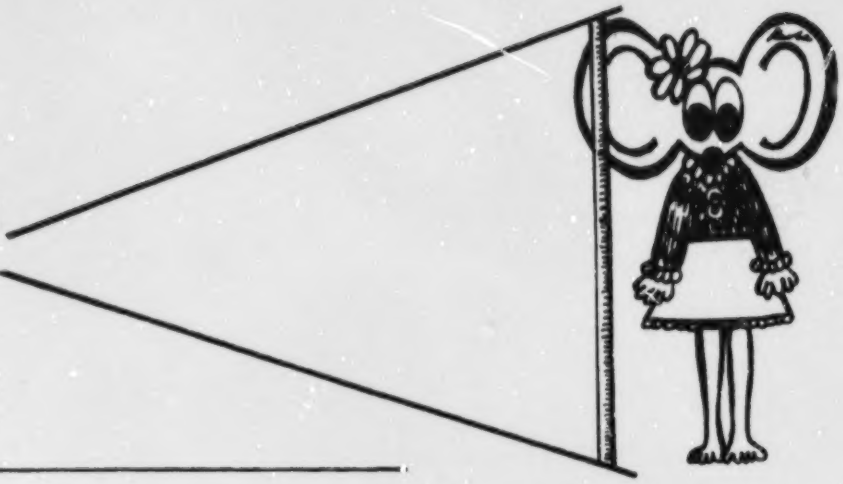
_____cm



_____cm

1st Grade

The student will be able to measure lengths in whole centimetres.



NAME _____

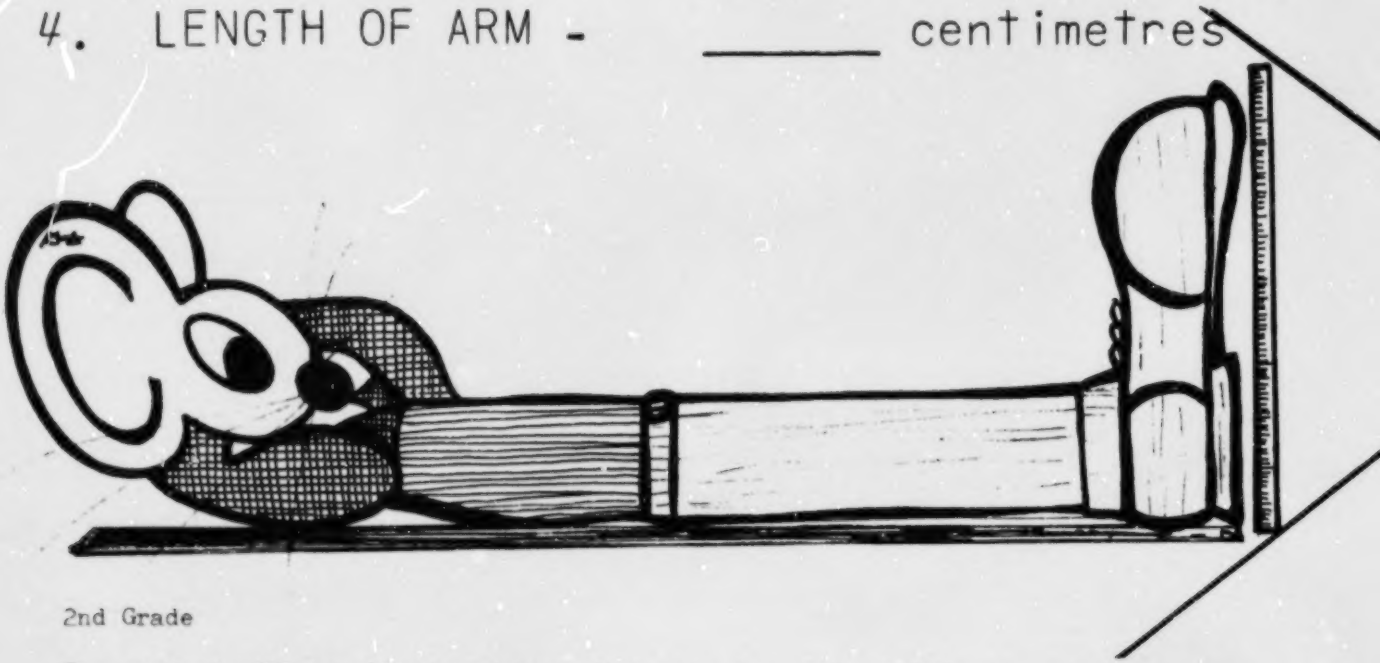
1. HEIGHT - _____ metres

_____ centimetres

2. LENGTH OF SHOE - _____ centimetres

3. WAIST - _____ centimetres

4. LENGTH OF ARM - _____ centimetres

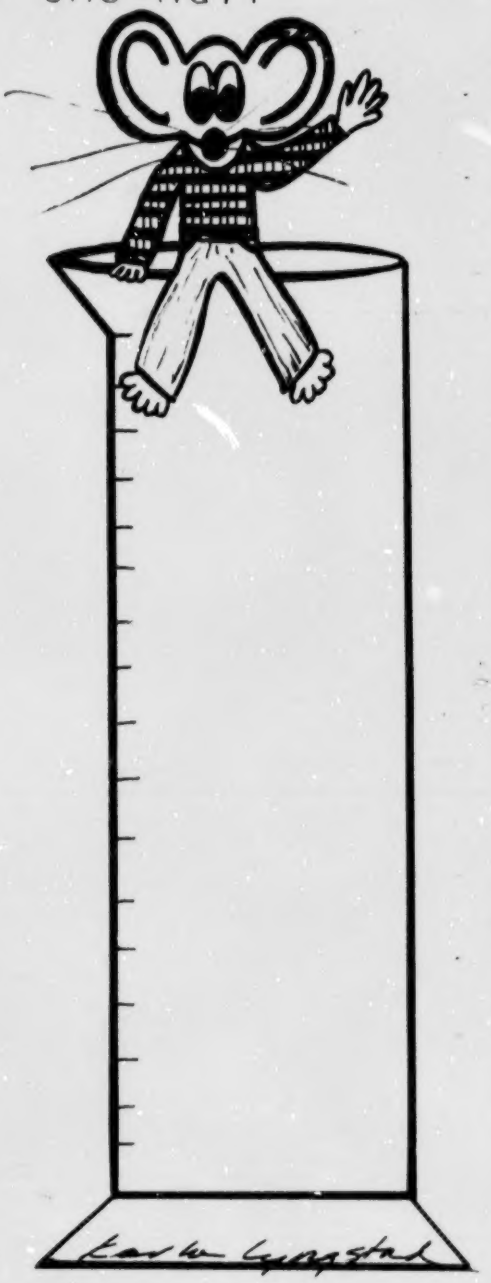


2nd Grade

The student will be able to measure distances in metres to the nearest whole metre.

LITRE MEASURES

Use water in a graduated cylinder to measure to the nearest one-half litre.



1. coffee cup _____ l

2. school milk carton _____ l

3. 2 pop bottles _____ l

4. orange juice can _____ l

5. milk carton full _____ l

6. liquid detergent bottle _____ l

7. can of pop _____ l

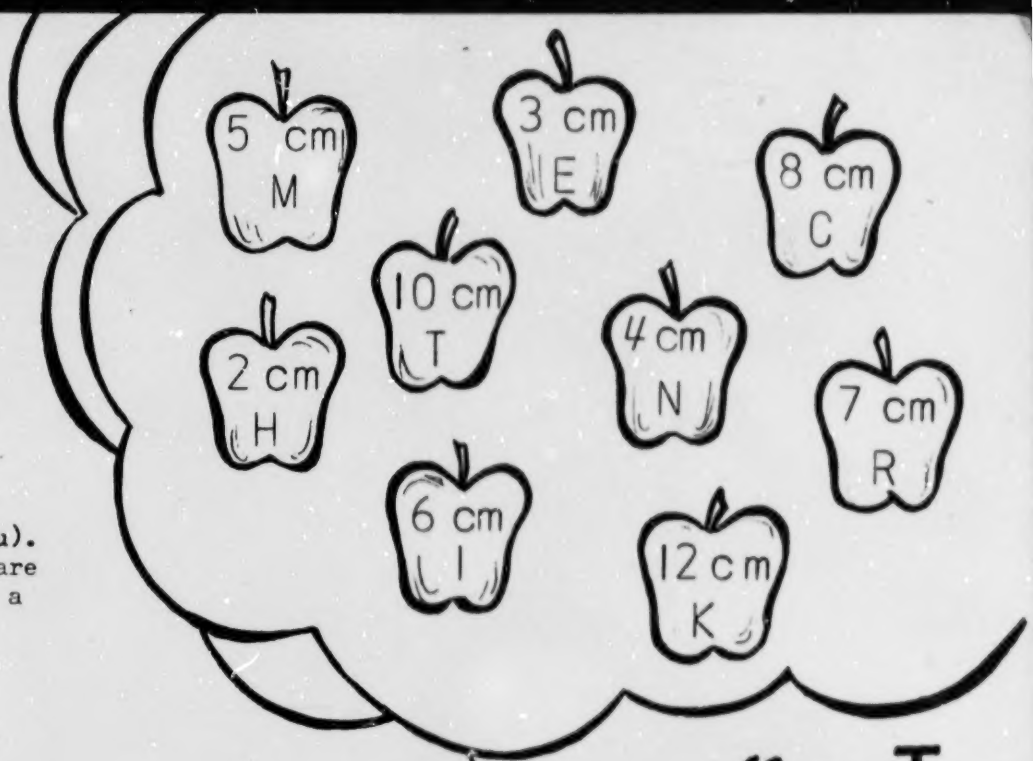
2nd Grade

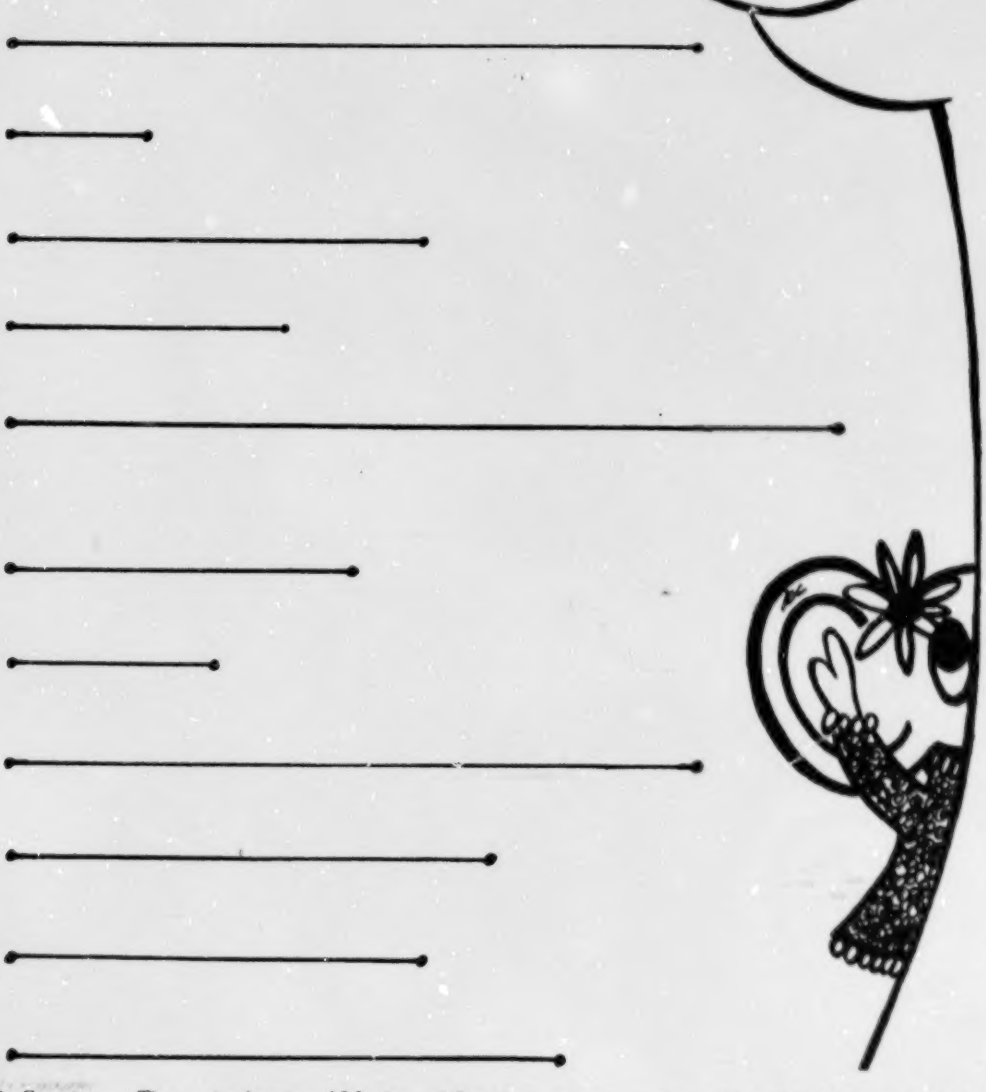
The student will be able to measure with a litre container using water, the volume of common objects. (Example: milk container, cup, glass, pop bottle.)

APPLE

ANSWER

Measure each line segment to find the correct letter (one has been done for you). When all the blanks are filled you will have a metric message.





10 cm = T

____ cm = ____

____ cm = ____

____ cm = ____

____ cm = ____

____ cm = ____

____ cm = ____

____ cm = ____

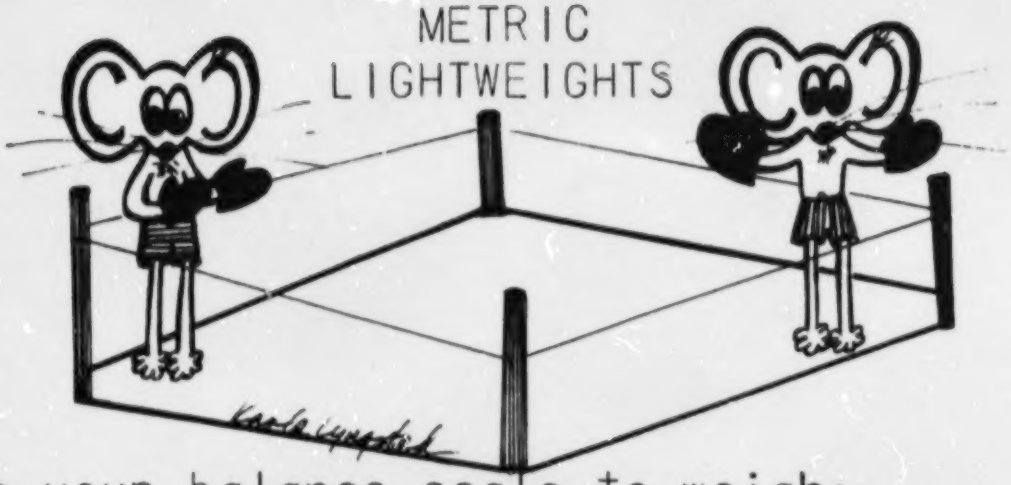
____ cm = ____

____ cm = ____

____ cm = ____

3rd Grade The student will be able to measure lengths to the nearest centimetre.

METRIC LIGHTWEIGHTS



Use your balance scale to weigh:

1. How many raisins make 10 grams?

   _____

2. How many small paper clips make 10 grams?

   _____

3. How many of each do you think would make 50 grams?

   _____

   _____

4. How many raisins would make 1 kilogram?

   _____

5. Find other objects less than 200 grams. Record the results below.

   _____

   _____

   _____

   _____

   _____

3rd Grade

The student will be able to measure mass (weight) of objects in grams or kilograms on a balance scale or similar metric scale.

HOW'S THE WEATHER?

Write "too hot" or "too cold" to answer these questions.

1.	10° C	swim	_____
2.	32° C	ice skate	_____
3.	43° C	ride a sled	_____
4.	2° C	water ski	_____
5.	5° C	picnic	_____
6.	22° C	snow ski	_____
7.	37° C	make a snowman	_____
8.	-19° C	wash your car	_____
9.	-40° C	play tennis	_____
10.	-27° C	play golf	_____
11.	1° C	mow the lawn	_____
12.	16° C	snowmobile	_____

3rd Grade

The student will be able to measure, in Celsius, degrees of warm and cold objects.

METRE? LITRE? GRAM?

Metre is the metric unit for measuring how long, how wide or how high something is. (m)

Gram is the metric unit for measuring how heavy or how light scmething is. (g)

Litre is the metric unit for measuring how much is needed to fill something. (l)

A. Which metric unit is being used in each picture below? Circle the correct answer for each picture.

metre (m)
gram (g)
litre (l)

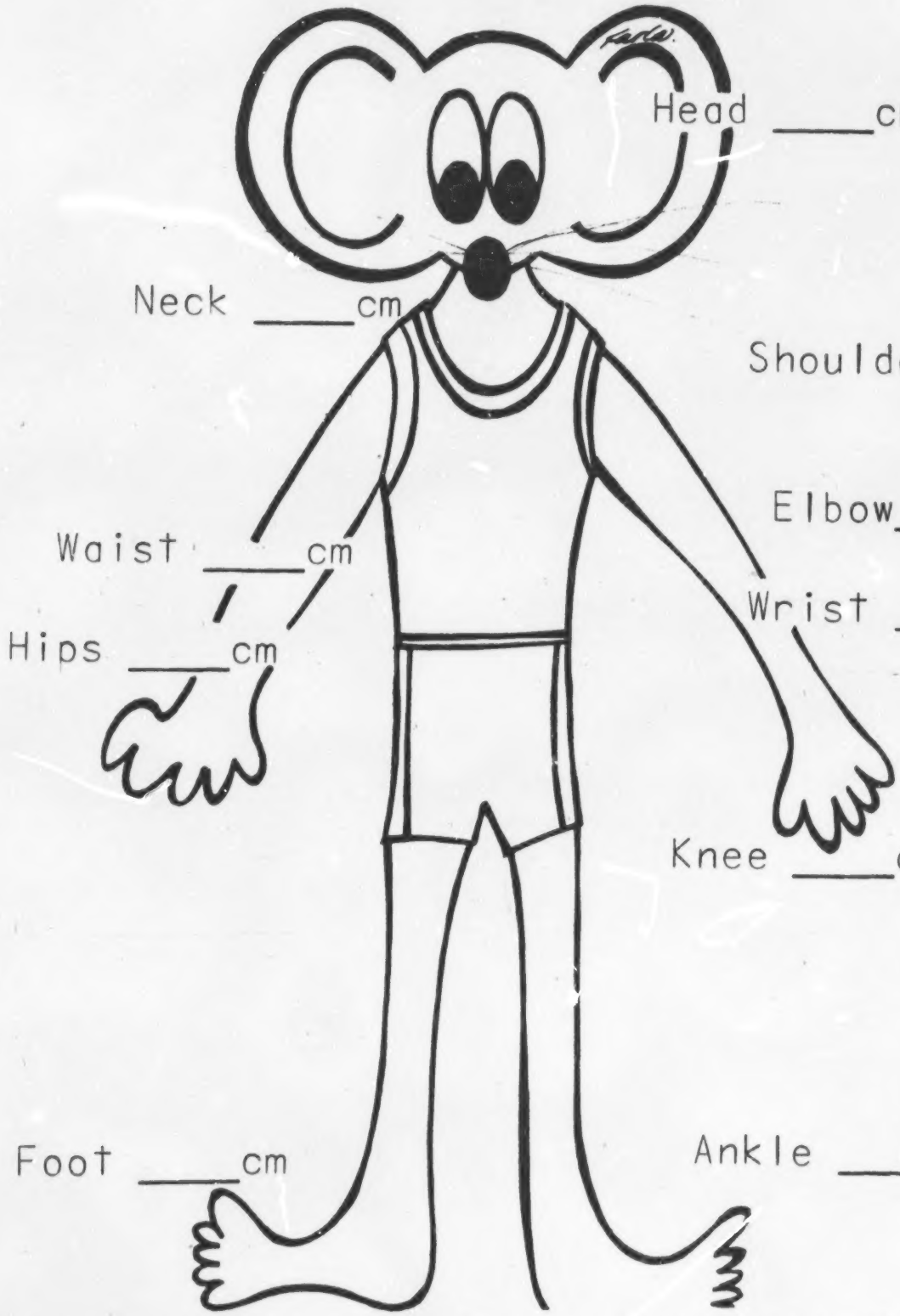
metre (m)
gram (g)
litre (l)

metre (m)
gram (g)
litre (l)

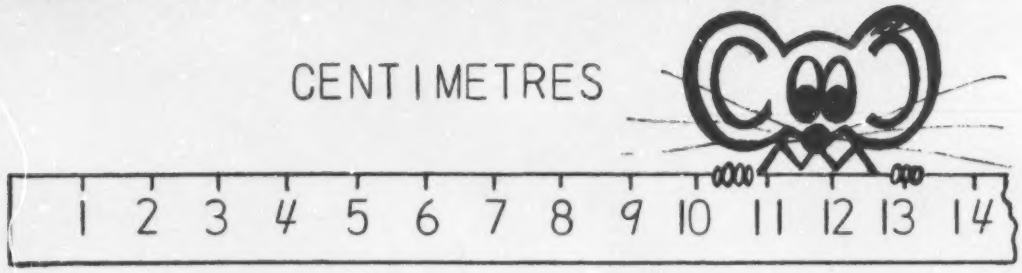
3rd Grade

The student will be able to recognize symbols for the following: A. gram B. metre C. millimetre D. centimetre E. litre

BODY MEASUREMENTS



CENTIMETRES



Use a cm ruler. Estimate how many centimetres wide this page is. _____cm
Measure it to the nearest centimetre.
_____cm

Do the exercises on the following chart.

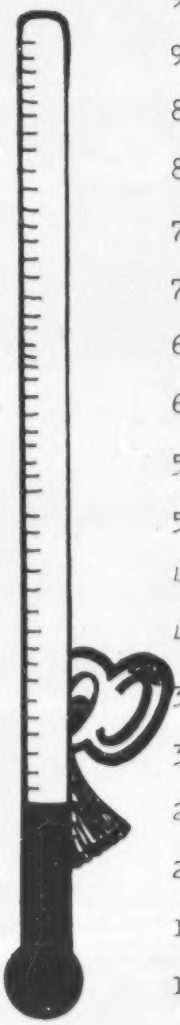
Object	Estimated Length	Actual Length
pencil	cm	cm
chalk	cm	cm
ring finger	cm	cm
math book	cm	cm
notebook	cm	cm
your desk	cm	cm

4th Grade

The student will be able to estimate objects in metres, centimetres and millimetres.

TEMPERATURE ACTIVITIES

Find the temperature of the things listed on this graph in degrees Celsius (C). Color each column to the correct temperature.



	ROOM TEMPERATURE	TEMPERATURE IN THE HALLWAY	HOT TAP WATER	DRINKING WATER	ICE WATER	HOLD THE THERMOMETER BETWEEN YOUR HANDS	SNOW BANK	A PILE OF LEAVES	YOUR CHOICE
100°C									
95°C									
90°C									
85°C									
80°C									
75°C									
70°C									
65°C									
60°C									
55°C									
50°C									
45°C									
40°C									
35°C									
30°C									
25°C									
20°C									
15°C									
10°C									
5°C									
0°C									
-5°C									

4th Grade The student will be able to measure temperature in Celsius degrees to the nearest whole degree.

METRIC PINWHEEL

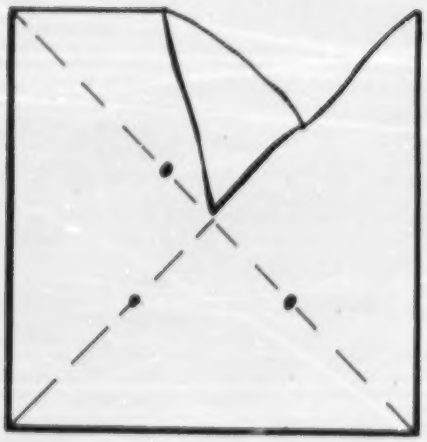
1. Cut a piece of paper 12 cm square.

2. Draw pencil lines connecting opposite corners.

3. On each line 2 cm from the center place a mark, and cut from the corner to this mark with a scissors.

4. Bend in to the center every other corner to make the pinwheel pictured.

5. Fasten the wheel to the stick or dowel with a thumbtack or pin.



4th Grade

The student will be able to construct an object such as a paper hat or boat from metric measurements.

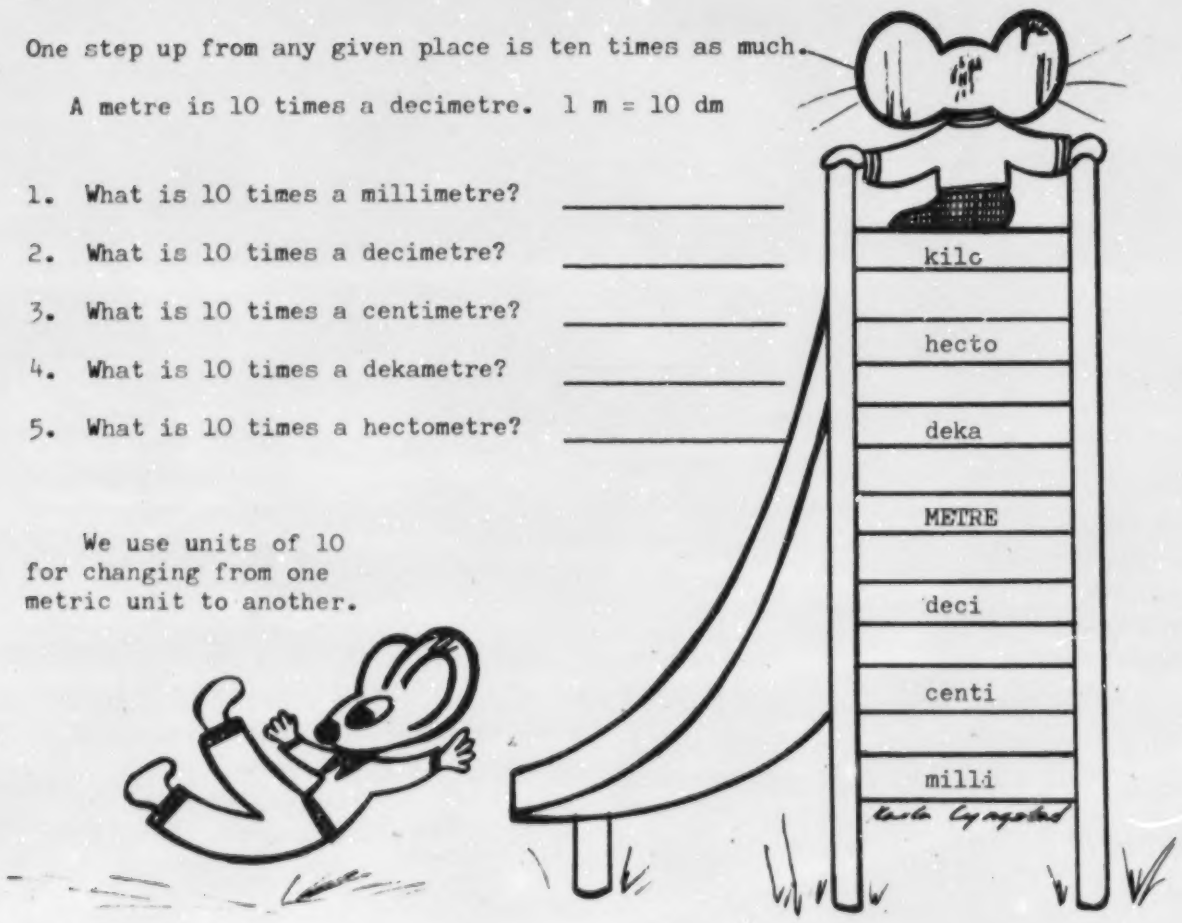
PLACE VALUE

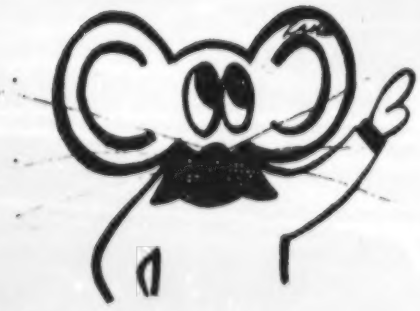
One step up from any given place is ten times as much.

A metre is 10 times a decimetre. 1 m = 10 dm

1. What is 10 times a millimetre? _____
2. What is 10 times a decimetre? _____
3. What is 10 times a centimetre? _____
4. What is 10 times a dekametre? _____
5. What is 10 times a hectometre? _____

We use units of 10 for changing from one metric unit to another.





Two steps up from any given place is 100 times as much.

A metre is 100 times a centimetre. 1 m = 100 cm

6. What is 100 times a metre? _____
7. What is 100 times a centimetre? _____
8. What is 100 times a millimetre? _____
9. What is 100 times a dekametre? _____

Three steps up from any given place is 100 times as much.

A kilometre is 1000 times a metre. 1 km = 1000 m

10. What is 1000 times a metre? _____
11. What is 1000 times a millimetre? _____

5th Grade The student will be able to write out the six common prefixes and describe what each means.

METRIC SHORT CUTS
(DIVISION)

When dividing by 10 you move 1 place to the left.

EXAMPLE:

831.9 ÷ 10 = 831.9

When dividing by 100 you move 2 places to the left.

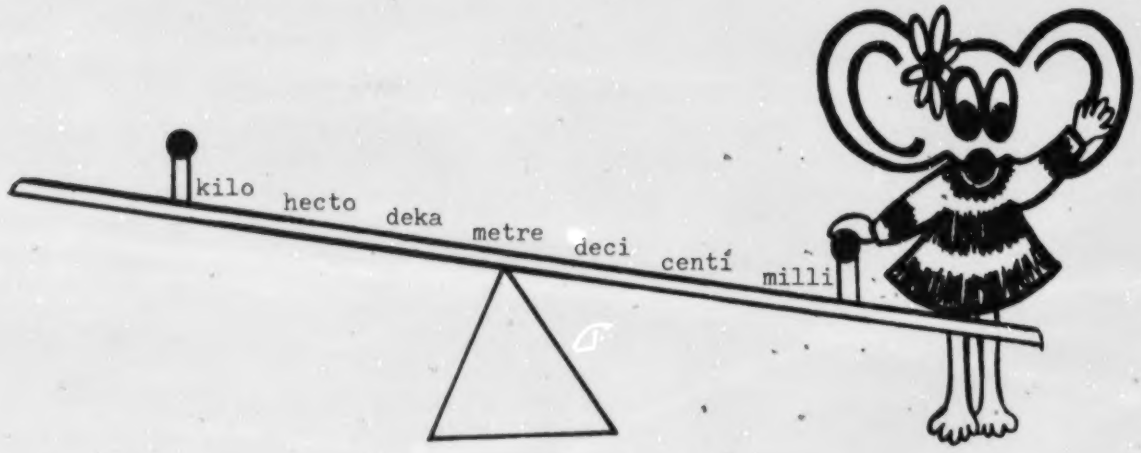
EXAMPLE:

831.9 ÷ 100 = 831.9

When dividing by 1000 you move 3 places to the left.

EXAMPLE:

831.9 ÷ 1000 = 831.9



Complete

1. 54.14 mm = _____ cm
2. 612.2 cm = _____ m
3. 26.1 mm = _____ cm
4. 341.12 cm = _____ m
5. 4541.2 m = _____ km
6. 52.1 cm = _____ m
7. 32 m = _____ km
8. 421 mm = _____ cm
9. 37 m = _____ km
10. 4331 m = _____ km

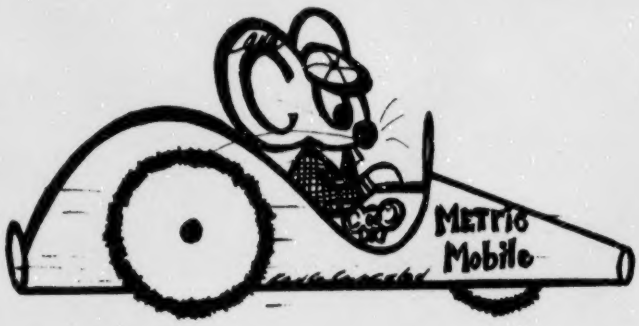
5th Grade

The student will be able to recognize the relationship between metres and kilometres.

METRIC MEASURES

Complete the sentences by using the following words: millimetre, centimetre, metre and kilometre.

Metric Mouse is going _____ per hr.



1. Billy is 89 _____ tall.
2. A dime is about 2 _____ thick.
3. Main street is approximately 2 _____ in length.
4. The Bismarck Demons won the 100 _____ track event.
5. My desk is 80 _____ wide.
6. A man's height might be 2 _____.
7. The speed limit on the highway is 88 _____ per hour.
8. Joe's name bracelet is 20 _____ wide.
9. Karla bought 3 _____ of cloth to make a flag.
10. The hallway was 4 _____ long.
11. Ann lives 2 _____ from school.
12. It is 160 _____ from Dickinson to Bismarck.

6th Grade

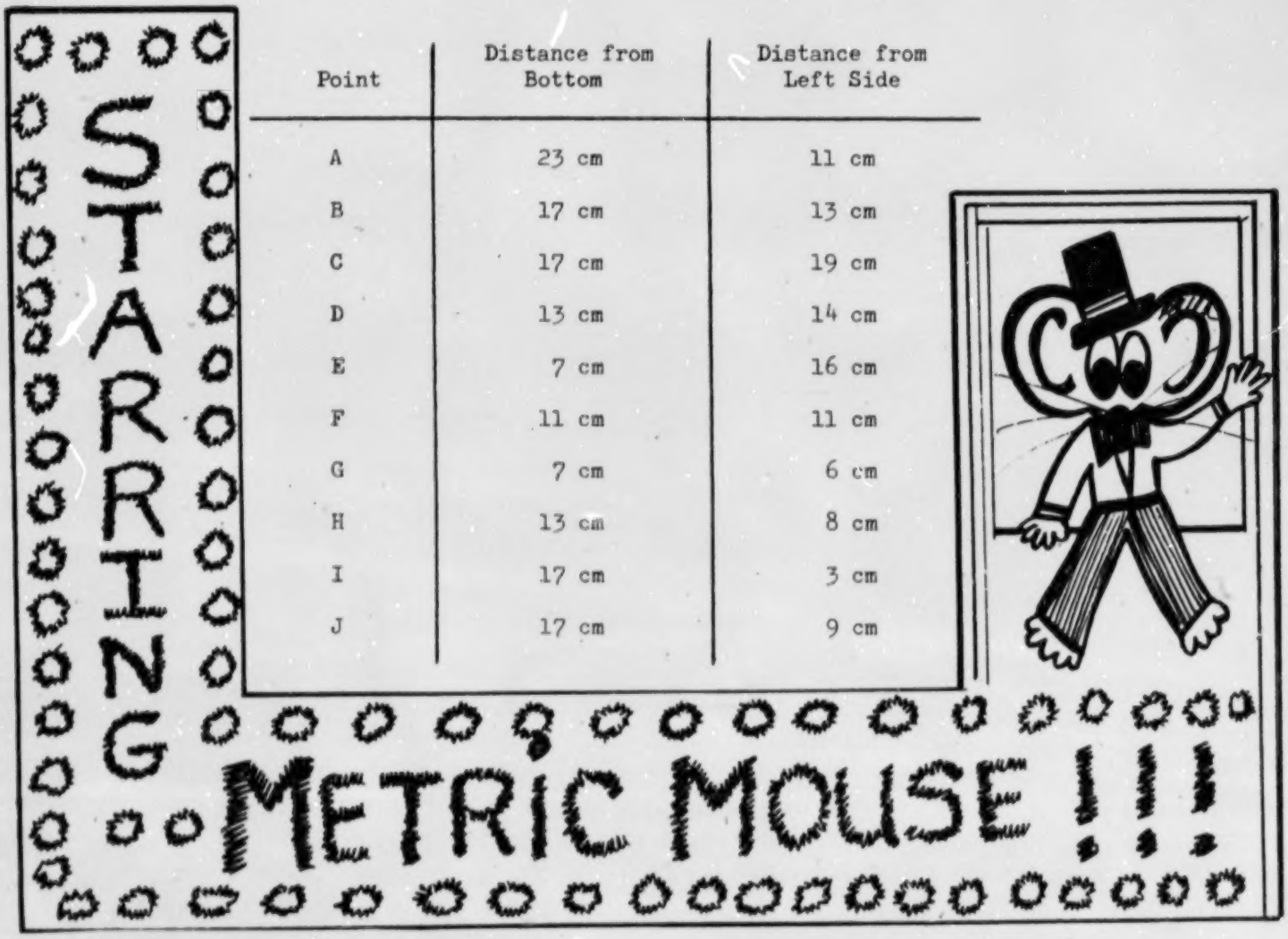
The student will be able to select the best unit of measurement for a given object.

STAR OF THE SHOW

Use an ordinary sheet of white paper. Place point A, 11 centimetres from the left edge and 23 centimetres from the bottom of the page. Place point B, 13 centimetres from the left edge and 17 centimetres from the bottom of the page. Continue with the ten points as shown in the table below:

With a ruler, draw a line between points A and B; B and C; C and D; E and F etc. to complete the picture.

Point	Distance from Bottom	Distance from Left Side
A	23 cm	11 cm
B	17 cm	13 cm
C	17 cm	19 cm
D	13 cm	14 cm
E	7 cm	16 cm
F	11 cm	11 cm
G	7 cm	6 cm
H	13 cm	8 cm
I	17 cm	3 cm
J	17 cm	9 cm

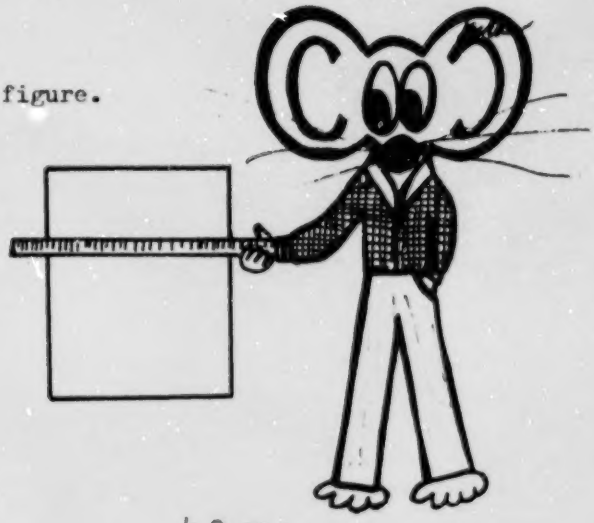


6th Grade

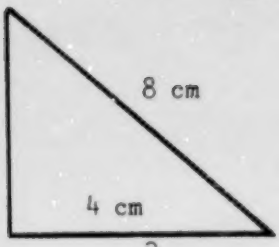
The student will be able to use a ruler to draw a line segment with length specified in centimetres or millimetres.

AREA

Find the area of each figure.

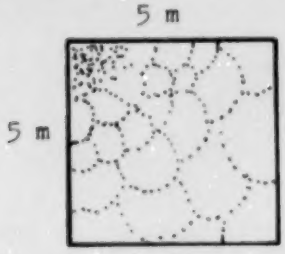


1.



Area: _____ cm^2
(area of a triangle = ½ base x height.)

2.

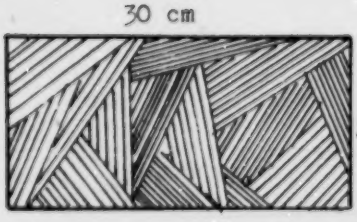


Area: _____ m^2

3.

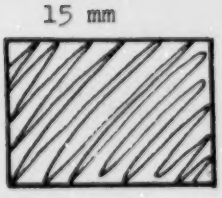
Area: _____ cm^2

4.



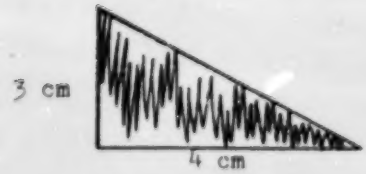
Area: _____ cm^2

5.



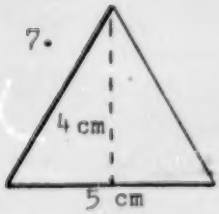
Area: _____ mm^2

6.



Area: _____ m^2

7.

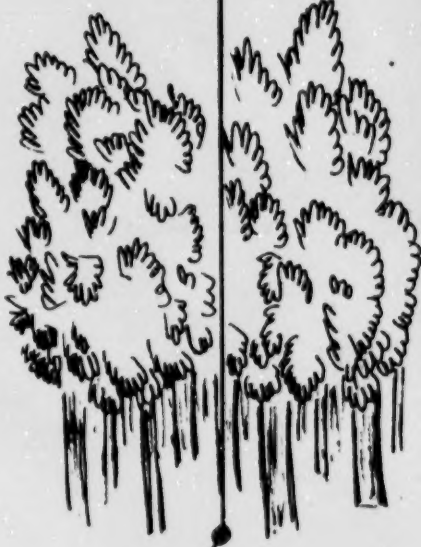


Area: _____ cm^2

6th Grade

The student will be able to find the area of a given geometric figure.

MOTORCYCLE RALLY



Use a millimetre ruler to find how far Metric Mouse traveled on his motorcycle.

1. start to mountain _____cm
   _____mm
2. from mountain to trees _____cm
   _____mm
3. from trees to lake _____cm
   _____mm
4. from lake to detour sign _____cm
   _____mm
5. from detour sign to finish _____cm
   _____mm
6. How far did Metric Mouse travel? _____cm
   _____mm

6th Grade The student will be able to write equivalents in the metric system using millimetres to centimetres and centimetres to millimetres.